

## Standard Operating Procedure

### Lower Passaic River Restoration Project

---

#### Equipment Decontamination

Procedure Number: LPR-G-03

Revision No.: 5

Revision Date: July 2011

Prepared by

Kristen Durocher

*Debra L. Simmons*

*Laura Kelmar*

Laura Kelmar, AECOM Project Manager

Date: July 7, 2011

Debra L. Simmons, Project QA Manager

Date: July 7, 2011

Annual review of this SOP has been performed  
and the SOP still reflects current practice.

Initials: \_\_\_\_\_ Date: \_\_\_\_\_  
Initials: \_\_\_\_\_ Date: \_\_\_\_\_

# **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page i of i

---

## **Contents**

<b>1.0</b>	<b>SCOPE AND APPLICABILITY.....</b>	<b>1</b>
<b>2.0</b>	<b>HEALTH AND SAFETY CONSIDERATIONS.....</b>	<b>1</b>
<b>3.0</b>	<b>INTERFERENCES.....</b>	<b>1</b>
<b>4.0</b>	<b>EQUIPMENT AND MATERIALS.....</b>	<b>2</b>
<b>5.0</b>	<b>PROCEDURES.....</b>	<b>3</b>
<b>6.0</b>	<b>QUALITY ASSURANCE/QUALITY CONTROL.....</b>	<b>6</b>
<b>7.0</b>	<b>DATA AND RECORDS MANAGEMENT.....</b>	<b>6</b>
<b>8.0</b>	<b>PERSONNEL QUALIFICATIONS AND TRAINING.....</b>	<b>6</b>
<b>9.0</b>	<b>REFERENCES.....</b>	<b>7</b>
<b>10.0</b>	<b>REVISION HISTORY.....</b>	<b>7</b>

# **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page i of 7

## **1.0 Scope and Applicability**

The purpose of this document is to define the standard operating procedure (SOP) for decontamination of equipment, instruments, and other materials used during implementation of field tasks in the Lower Passaic River Study Area and the Newark Bay Study Area as part of the Lower Passaic River Restoration Project (LPRRP). Decontamination is the process of neutralizing, washing, and rinsing exposed surfaces of equipment to minimize the potential for contaminant migration and/or cross-contamination. This procedure does not apply to personnel decontamination which is described in the site-specific Health and Safety Plan (HASP) and associated addendums (MPI 2005a; MPI 2005b; AECOM 2011).

It is fully expected that the procedures outlined in this SOP will be followed. Procedural modifications to this SOP may be warranted depending upon field conditions, equipment limitations, or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Project Quality Assurance (QA) Manager and Task Manager and communicated to the Cooperating Parties Group (CPG) Project Coordinator and to the United States Environmental Protection Agency (USEPA) Remedial Project Manager. Deviations from this SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

## **2.0 Health and Safety Considerations**

- 2.1** The health and safety considerations for the work associated with this SOP, including physical, chemical and biological hazards, are addressed in the HASP and associated addendums (MPI 2005a; MPI 2005b; AECOM 2011).
- 2.2** Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. As detailed in the HASP, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

## **3.0 Interferences**

- 3.1** Equipment decontamination should be performed in an area that does not interfere with sampling activities, but sufficiently close to maintain an efficient working environment. Whenever possible, decontamination activities will be performed in a location that is not subject to potential sources of contamination (for example, generators and other combustion engines). Where decontamination is required on a boat, the vessel's engines must be turned off during decontamination. Ideally, boat engines and/or generators should be shut off during collection of equipment blanks, consistent with collection of river water samples. If this is not possible, then the sampling platform should be positioned upwind from any running combustion engines.

## **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page ii of 7

**3.2** Equipment that is improperly or inadequately decontaminated may result in biased sample results. To avoid sample contamination, the procedures and equipment specified in this SOP are to be followed. Specifically:

- The decontamination materials, including detergent, water, solvents, and acids, will meet the specifications of the SOP;
- Buckets and other containers holding decontamination solutions will be labeled to segregate containers holding "dirty" from "clean" solutions, and brushes will be dedicated to a particular step in the decontamination process; and
- Decontaminated equipment that is not immediately reused will be covered/wrapped in plastic or aluminum foil (shiny side out) and marked to indicate it is clean.

## **4.0 Equipment and Materials**

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- personal protective equipment (PPE) and other safety equipment, as required by the HASP;
- bristle brushes;
- plastic wash/rinse buckets or tubs;
- phosphate-free biodegradable detergent (e.g. Liquinox®, Alconox®);
- Joy® (or equivalent) detergent (for oily residues);
- 10% nitric acid, reagent grade;
- methanol (pesticide grade or better in separate Teflon bottles);
- hexane (pesticide grade or better in separate Teflon bottles);
- deionized "analyte-free" water (DIW);
- stainless steel bowls or pans (labeled as needed);
- squeeze bottles (Teflon® for solvent)
- aluminum foil;
- plastic sheeting;
- zipper-lock bags;
- tap water (from any treated municipal water supply);
- high-pressure/steam cleaner;
- sample container(s) for equipment rinsate blank, if collected;
- investigation-derived waste (IDW) storage containers (refer to SOP LPR-G-04); and
- field logbook and standardized forms as needed.

# **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page iii of 7

## **5.0 Procedures**

Sampling equipment (including newly purchased equipment) that comes into contact with the media to be sampled will be decontaminated prior to use in the field to eliminate or minimize cross-contamination. The frequency of decontamination is provided in the task-specific SOPs (for example, surface water sampling, grab sampling, sediment collection via vibracore, core processing). Sufficient decontaminated equipment will be available to be dedicated to the sampling locations planned for each day, where feasible. Equipment will be decontaminated in the area designated for decontamination.

For the LPRRP, surface water and sediment samples may be submitted for chemical, radiochemical, biological, and geotechnical analyses as described in the Quality Assurance Project Plan (QAPP). Sampling equipment will be decontaminated as described in Section 5.0 below. Decontamination of the sampling equipment will be commensurate with the analyses to be performed.

Solvents used during decontamination activities will be collected and handled in accordance with residuals management procedures outlined in SOP LPR-G-04 – Investigative Derived Waste (IDW) Handling and Disposal.

Not all sampling equipment will require full decontamination procedures. Three levels of decontamination (i.e., solvent, soap and water, or ambient water decontamination) will be performed based on the usage of the sampling equipment as defined below.

### **5.1 General preparation**

Inspect equipment needed for sample collection to ensure that it is in good working order and establish an equipment decontamination area that includes a collection basin that can be placed beneath the equipment to collect decontamination fluids, brushes, and a series of wash bottles for each of the solutions specified in the following section. An IDW container and storage system will also be established as outlined SOP LPR-G-04 – Investigative Derived Waste (IDW) Handling and Disposal.

### **5.2 Level I (Decontamination with Ambient Water):** The following steps will be used to decontaminate sampling and support vessels, vessel anchors, lines, ropes, vibracoring head, and buoy marker weights:

**5.2.1** Personnel will dress in suitable PPE to reduce exposure to contaminants (refer to the HASP).

**5.2.2** Equipment will be rinsed with river water onboard the sampling vessel.

**5.2.3** Rinse water will not be contained.

**5.2.4** Daily decontamination of the decks of the vessels will consist of a river water washing as soon as possible after concluding work. Further wash-down with tap water at the marina is at the discretion of the boat's captain.

### **5.3 Level II (Decontamination with Soap and Water):** The following steps will be used to decontaminate equipment that is not intended to collect samples for chemical analysis (e.g., sample storage coolers):

**5.3.1** Personnel will dress in suitable PPE to reduce exposure to contaminants (refer to the HASP).

**5.3.2** Residual sediment will be scraped off and the equipment rinsed with site/river water (on the

## **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page iv of 7

sampling vessel while on site).

- 5.3.3** Residual sediment on equipment that is decontaminated at the field facility will be collected according to IDW procedures outlined in SOP LPR-G-04 – IDW Handling and Disposal.
- 5.3.4** Equipment may be rinsed with tap water if needed to further remove gross contamination.
- 5.3.5** Equipment will be placed in a wash tub or bucket (if size allows) containing Alconox® (or other phosphate-free detergent) along with tap water, and scrubbed with a bristle brush or similar utensil.
- 5.3.6** Equipment will be rinsed twice with tap water over a bucket using a squeeze bottle or pressure washer.
- 5.3.7** Following decontamination, equipment will be placed in a dedicated clean area or will be protected from re-contamination by covering with plastic or wrapping in foil.
- 5.3.8** Rinse water and detergent water will be replaced frequently. Residual decontamination water used on the boat will be held in 5-gallon buckets, labeled, and transferred to the field facility for collection and ultimate disposal in accordance with IDW procedures outlined in SOP LPR-G-04 – Investigation Derived Waste (IDW) Handling and Disposal.

**5.4** Level III (Decontamination with Solvents): The following decontamination procedure is based on a modification of the Region 2 procedure (USEPA, 1989). The following steps will be used to decontaminate small sampling equipment that will come into contact with sediment or surface water designated for chemical analysis. This sampling equipment includes stainless steel trowels, spoons and bowls, core tubes, stainless steel core cutters and catchers, plastic caps for the core tubes, trigger-activated bottle samples, and CFLEX tubing. Sampling devices will be decontaminated between collection of samples at different depths and different times at the same sampling location.

- 5.4.1** Personnel will dress in suitable PPE to reduce exposure to chemicals and contaminants (refer to the HASP).
- 5.4.2** Any residual sediment will be scraped off and the equipment rinsed with site/river water (on the vessel while on site).
- 5.4.3** Residual sediment on equipment that is decontaminated at the field facility will be collected according to IDW procedures outlined in SOP LPR-G-04 – Investigative Derived Waste (IDW) Handling and Disposal.
- 5.4.4** Equipment may be brushed and rinsed with tap water if needed to further remove gross contamination.
- 5.4.5** Equipment will be placed in a wash tub or bucket containing Alconox (or other phosphate-free detergent) along with tap water, and scrubbed with a bristle brush or similar utensil. Equipment will be rinsed with tap water over a second wash tub or bucket, using a squeeze bottle or pressure sprayer, followed by a 10% nitric acid rinse (for metals analyses), a DIW rinse, a methanol rinse, a hexane rinse (for organic analyses), and lastly with a DIW rinse. Rinses shall utilize sufficient amounts of solvent/water to flush rather than just wet the surface. The volume of DIW used during the rinse must be at least five times the volume of solvent used.
- 5.4.6** Core liners will be decontaminated by pouring a small amount of detergent and tap water into

## **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page v of 7

each core, capping the ends, and agitating the core liner so that all surface areas are flushed with the liquid. The detergent and tap water will be containerized as IDW and the process repeated with tap water, 10% nitric acid, DIW, methanol, hexane, and DIW. All decontamination solutions will be containerized as IDW and handled as described in Section 5.4.8.

- 5.4.7** Following decontamination, equipment will be placed in a clean area on clean aluminum foil or plastic sheeting and allowed to air dry. Following air drying, the equipment will be wrapped in aluminum foil, shiny side out, or placed in a zipper-lock bag, if not immediately re-used for sample collection. Larger equipment may be wrapped in clean plastic sheeting. Equipment that may be used immediately (i.e., before fully air dried) may be reused providing obvious deionized water has been shaken off. Core liners will be capped with clean caps, and the caps taped in place. The core liners will then be placed back into their original packaging for storage. Clean equipment should be marked in some way to indicate that it is clean. Core liners will not be marked; instead, caps taped in place on both ends of a liner will indicate that it has been decontaminated.
- 5.4.8** Used decontamination solutions and associated materials will be collected for ultimate disposal in accordance with IDW procedures outlined in SOP LPR-G-04 – Investigative Derived Waste (IDW) Handling and Disposal. Equipment decontamination waste materials generated on the vessel will be collected in 5-gallon buckets, labeled, and transferred to the field facility for disposal.
- 5.5** Field instrumentation should be cleaned according to the manufacturer's instructions. Care will be taken to prevent damage to equipment. Field instruments such as water quality meters will be rinsed daily during field operations at the end of each workday with DIW at a minimum, or more rigorously according to the manufacturer's instructions. When possible, instruments which are difficult to decontaminate, such as cameras and data logging instruments, may be protectively wrapped to reduce or eliminate the need for decontamination.
- 5.6** Pumps used for surface water sampling will be rinsed with tap water prior to and following each day of use. Decontamination of the pump between stations or between depths is not required. Tubing will be received from the laboratory pre-cleaned and in dedicated packaging and will not require decontamination in the field.
- 5.7** Other sampling equipment that might be used and that has had direct contact with sediments or wastes will be decontaminated at a designated area prior to leaving the Site. If the above decontamination procedures are not applicable or feasible, the decontamination procedure will be as follows:
- 5.7.1** Equipment will be wrapped or draped in plastic or placed in the plastic-lined cargo area of a truck for transport to the area designated for decontamination.
- 5.7.2** Equipment will first be washed with a hot water, high-pressure spray or steam-cleaned.
- 5.7.3** Equipment will then be rinsed, by hose or high pressure spray, with tap water.
- 5.7.4** Wash and rinse water will be collected and handled in accordance with IDW procedures outlined in SOP LPR-G-04 – Investigative Derived Waste (IDW) Handling and Disposal.
- 5.8** Equipment leaving the Site upon the completion of on-site investigation activities will be decontaminated according to Sections 5.2, 5.3, 5.4, 5.5, or 5.6, above.

# **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page vi of 7

- 5.9** Equipment rinsate blanks will be collected to assess the adequacy of equipment decontamination procedures. Equipment rinsate blanks will be submitted for testing at the frequency specified in the QAPP. The equipment rinsate blank collection procedures are included in the SOPs for the individual tasks (surface water sampling, sediment sampling, core processing, etc.).

## **6.0 Quality Assurance/Quality Control**

- 6.1** Decontamination QA/QC procedures described in Section 5.0 will be performed to assess the adequacy of equipment decontamination procedures. Equipment rinsate blanks will be collected at the frequency specified in the QAPP (QAPP Worksheet #20).
- 6.2** It is the responsibility of the Field Task Manager to periodically check/ensure that the equipment decontamination procedures are in conformance with those stated in this SOP.

## **7.0 Data and Records Management**

- 7.1** Documentation of decontamination procedures will be contained in the field logbook or recorded on the appropriate task-specific standardized form and should include:
- a list of equipment being decontaminated along with the date and time;
  - a brief description of the procedure and materials used during the process (e.g., Level I/ambient water rinse; Level II/soap and water rinse; Level III/acid and solvent rinse);
  - the names of the project staff performing the decontamination;
  - documentation of equipment rinsate blanks including sample ID, date and time, the equipment rinsed, collector, and parameters; and
  - IDW storage and disposal.
- 7.2** Field data will be distributed to the appropriate personnel as described in the Lower Passaic River Data Management Plan (DMP; AECOM 2010).
- 7.3** Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and summarized on the Daily Activity Log (refer to SOP LRP-G-01 – Field Records). A formal nonconformance report (NCR) will be completed (refer to SOP LRP-G-01 – Field Records) and distributed as specified in the QAPP.
- 7.4** All records associated with the activities described in this SOP will be ultimately maintained in accordance with the Lower Passaic River Restoration Project Quality Management Plan (AECOM 2009).

## **8.0 Personnel Qualifications and Training**

Individuals executing these procedures will have read, and be familiar with, the requirements of this



# **Standard Operating Procedure Lower Passaic River Restoration Project Equipment Decontamination**

SOP No.: LPR-G-03

Revision: 5

Date: July 2011

Page vii of 7

SOP and the corresponding LPRRP plans (e.g., HASP, QAPP, DMP). Decontamination of field equipment is a relatively simple procedure; no specialized training is needed. However, execution of these activities will initially be supervised by more experienced personnel.

## **9.0 References**

AECOM 2009. Quality Management Plan, Lower Passaic River Restoration Project, CERCLA Docket No. 02-2007-2009. September 2009 or current version.

AECOM 2010. Lower Passaic River Data Management Plan. July 2010 or current version.

AECOM 2011. Lower Passaic River Restoration Project, Remedial Investigation, Health and Safety Plan Addendum. June 2011 or current version.

MPI 2005a. Lower Passaic River Restoration Project Health and Safety Plan. January 2005.

MPI 2005b. Lower Passaic River Restoration Project Health and Safety Plan Final Addendum – Sediment Coring. July 2005.

Tierra 2007. Standard Operating Procedure No. 2 (Revision 2), Decontamination. Newark Bay Study Area Phase II RIWP, Appendix F, October, 2007.

USEPA 1989. Region II CERCL Quality Assurance Manual. Revision 1. October 1989.

## **10.0 Revision History**

<b>Revision</b>	<b>Date</b>	<b>Changes</b>
0	April 2008	NA
1	July 2008	Added Section 5.4.6 to discuss decontamination of core lines; reworded Section 5.3.8; corrected minor typos
2	June 2010	Added information specific to surface water sampling; logo change.
3	September 2010	Minor changes throughout the document
4	June 2011	Minor changes throughout the document
5	July 2011	Minor changes throughout the document